

Park

Documentation for a
Nationwide
Section 4(f) Evaluation

For the Reconstruction of the
Mount Lebanon Road and Rockland Road Intersection
New Castle County, Delaware

State Contract Number: 84-041-03
Federal Aid Number: HES - 84(1)

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Table of Contents

	<u>Page</u>
Introduction.....	1
Part One: Description of the Proposed Undertaking.....	2-5
Photographs of the Project Area	
Figure 1 - Project Design Plans	
Figure 2 - Right-of-Way Plans	
Part Two: Description of the 4(f) Property.....	5
Part Three: Applicability Criteria.....	5-7
Part Four: Alternatives.....	7-8
Part Five: Measures to Minimize Harm.....	8-12
Part Six: Coordination.....	12
Attachments	

Introduction

The purpose of this report is to provide documentation supporting a determination that no prudent or feasible alternative exists to the minor acquisition of public lands necessary for the reconstruction of the Mount Lebanon Road and Rockland Road intersection located in New Castle County, Delaware. Please refer to attached maps for exact project location. In an effort to ensure the adequacy of this documentation, the report is written in accordance with the provisions of the Nationwide 4(f) Evaluation, and includes five parts, each detailing or referencing pertinent appended information.

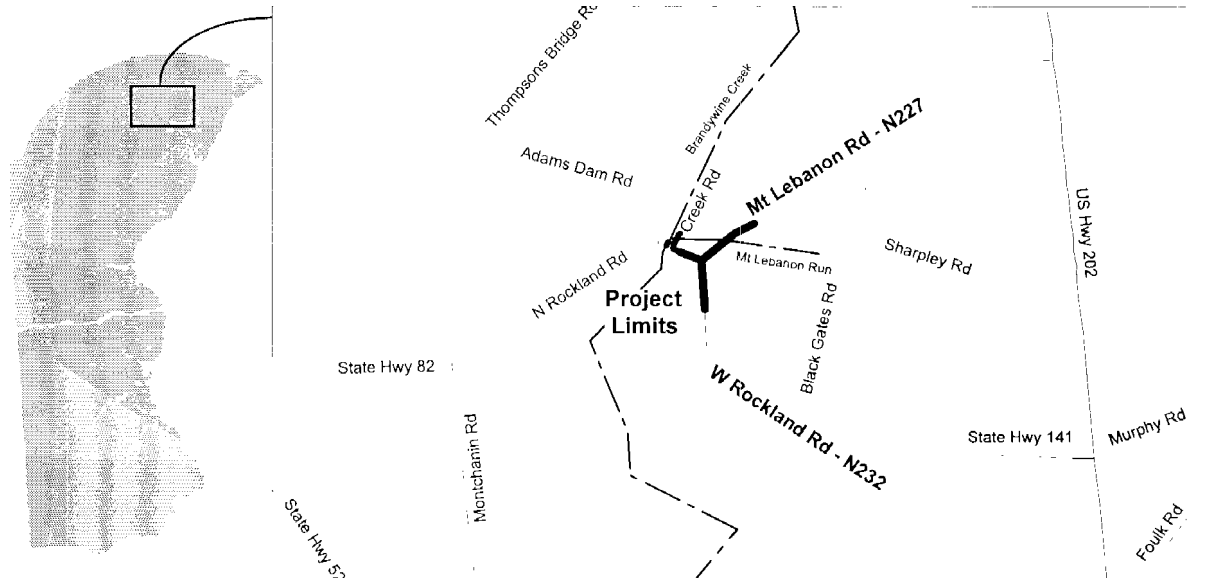
Part One describes the proposed FHWA / DelDOT undertaking. Part Two describes the 4(f) property located within the potential impact area of the project. Part Three evaluates the Applicability Criteria in support of the proposed alternative. Part Four discusses Alternatives. Part Five discusses measures to minimize harm. The last part includes coordination efforts and the written views of the Federal and State Agencies having jurisdiction over the Section 4(f) property.

The acceptance of this document by the consulting agencies, the Department of the Interior, National Park Service (NPS), New Castle County Parks and Recreation, Federal Highway Administration (FHWA), and the Delaware Department of Transportation (DelDOT), will conclude the responsibilities required in compliance with the Nationwide Section 4(f) Evaluation.

Part One

Description of the Proposed Action

The project involves the reconstruction of the Mount Lebanon Road and Rockland Road intersection. The project is located north-northwest from the City of Wilmington and is identified on the map below.



The proposed undertaking is located in an area rich with natural and cultural resources. Woodley Park is owned and administered by New Castle County and its property line abuts the southeast corner of the intersection. Brandywine Creek and Brandywine Creek State Park are in the nearby vicinity of the project area, as are other scenic resources. The Rockland Historic District encompasses nearly the entire project area.

The project location lies on the urbanized boundary for roadway functional classification. As such, Mt. Lebanon Road is classified as a major urban collector with a 1994 AADT of 5866. Rockland Road is functionally classified as a minor (rural) collector and its 1994 AADTs break down as follows: south of the Mt. Lebanon intersection = 3422, and north to west of the intersection = 6453. Both roads are two lane roadways, with primarily no shoulders.

For ease in describing the proposed undertaking, the roads will be referenced using their state maintenance road numbers. Rockland Road will be referenced as N232 and Mount Lebanon Road as N227.

The intersection of these roadways lie in a valley leading down to Brandywine Creek. Both roads are substandard in their varying widths and the slopes of the

intersection approaches are extremely steep, especially along N227. Southbound N232 has a varying width between 10' and 11' and northbound varies from 11' to 12'. N227 presently has two 10' lanes both east and westbound.

The typography of the area relates into steep vertical curves on the roadways. Along N232 at the southern most point of the project, the grade is 10.6%. The grade declines until it reaches the intersection, where it is 8.7%. After the intersection, it rises to a maximum value of 11.5% until it levels out at the bottom of the Brandywine Creek depression with a minimum grade of 3.3%. At the eastern most point of the project, N227 has a grade of 6.6%. It continues at this approximate value until about 450' before the intersection. At this point, the grade rapidly increases to a maximum value of 14.8% and continues at this grade until the intersection.

The geometrics of the intersection are considered substandard. The sight distance at the intersection is limited in both directions because of the roadway curvatures and inadequate corner cuts. Just north of the intersection, N232 curves sharply to the west, a near ninety-degree turn as it is sloping downwards to Brandywine Creek. A single stop sign on N227 westbound is the only traffic control measure for the intersection. Poor drainage patterns in the area often lead to wet or icy roadway conditions, especially along N227 where there are several stream crossings.

The substandard configuration, compounded by the drainage patterns, has contributed to a number of accidents over the years. The Department of Transportation annually produces a Critical Ratio Listing of every state maintained road in Delaware. The critical ratios are arrived at by utilizing a statistical test to determine whether the accident rate at a particular location is significantly higher than a predetermined average rate for roads of similar characteristics. For instance, a critical ratio of 1.00 for a particular road section signifies that this location experiences a "normal" rate of accidents for this type of road and given AADT. A critical ratio of 2.00 indicates an accident rate twice the statistically determined "normal" rate. The data is based on a 3-year accident history and 0.30 mile road section.

Bridge 1-002 carries N232 over the Brandywine Creek just beyond the projects limits to the west. It was closed for a major rehabilitation from August 1993 to March of 1994. During this closure, the N232 and N227 intersection had less traffic and fewer accidents; accordingly, the critical ratio for these roads fell. It has yet to be determined how the bridge's reopening has affected the critical ratio, because the accident data used to produce results will not be available until June 1996.

Presently, there are condominiums being constructed on the westbound side of N232. Access to these new units will be provided by the realigned Creek Road. With Bridge 002 now open and new residences soon expected, traffic volumes, and ultimately accident statistics, will probably return to their pre-construction levels. Prior to the bridge closure, near the intersection along N227 there was a critical ratio of 4.10 and along N232 it was 4.77. These numbers indicate an average approximate accident

rate 4.5 times higher than what would be expected for a roadway with similar widths and AADTs.

Accidents along these roadways are often associated with the steep grades and the curvature along N232. The surface conditions also are a major factor because the road surface is often wet. There are many mature trees throughout the project area that keep the intersection constantly shaded, and therefore make it difficult for it to dry thoroughly. Typically the accidents occur with vehicles approaching the intersection too fast and losing control because of the grade or the curvature. Presently the curve along N232 is not superelevated, creating the propensity for vehicles to travel off the roadway.

The Delaware Department of Transportation is proposing to make improvements to the N227 and N232 intersection. The new intersection will be primarily in the same location, with nearly all of the expansion utilizing land to the north. The project proposes to provide a separate right hand turning lane on N227 beginning about 320' from the intersection. At the intersection a stone paved concrete island will be installed to direct traffic turning right. At the intersection, westbound N227 will provide a 13' lane for left turns and a 20' lane for right turns, and a 10' section for eastbound traffic. All of these widths are considered necessary given the turning radii and steep grade of the intersection. N232 north of the intersection will be widened to provide an 11' merge lane for traffic turning off N227. Along N232 this lane continues as an 11' section to the realigned Creek Road, beyond which it drops to a 7' merge section out of Creek Road, a total length of approximately 400'.

Creek Road will be repositioned about 50' to the west to directly line up across from the entrance for The Mill Condominiums, and will serve as an entrance for the condominiums presently being constructed. The Creek Road realignment is being done by the developers of the new condominiums and is not a part of this contract. The new lane on N232 will serve as a deceleration lane for traffic turning right onto Creek Road, and the 7' section west of Creek Road will help accommodate traffic turning west onto N232. Along the sharp turn north of the intersection, N232 will be constructed at a superelevated angle to improve safety conditions.

Drainage work will improve the existing poor drainage patterns. The largest stream crossing along N227 is presently serviced by Bridge 523. It will be removed and replaced with a new concrete culvert structure. The structure will be wider to service the extra lane and will control the flow of water across N227. It will have an energy dissipater installed to slow storm water scouring activities. A collecting pool from this crossing will be tied into a pipe that feeds the Mill Pond, east of the intersection. Catch basins, pipes and gutters will be installed throughout the project area and will serve to move water off the roads, away from the intersection, and into an existing pipe that flows into Brandywine Creek. The new concrete culvert will be faced with stone on all exposed surfaces. A rip-rap swale will be constructed along the eastern side of N232.

It will be approximately 150' long. This will catch drainage coming down the steep slopes of Woodley Park and direct flow into a catch basin south of the intersection.

The existing stone wall along the southbound lane of N232 is inadequate to create the necessary grades needed along the Mill Pond. This wall is structurally failing and eventually will collapse, undercutting support for N232. It will be partially removed and replaced with a stone faced retaining wall. It will have a consistent height of three feet above the ground on the side facing N232. On the Mill Pond side, it will be stepped with a height range of five to fifteen feet. Boulders on the south bound side of N232 (directly across from N227) and about 240' feet of the existing stone wall will be removed. There is jersey barrier adjacent to the boulders to prevent out of control vehicles from sliding into the Mill Pond. The jersey barrier will be removed to accommodate the new wall. Stones from the relocated walls have been offered to the Brandywine Creek State Park for their stone wall repair efforts. There is a recently reconstructed 50' section of stone wall along southbound N232, closest to the historic Mill Workers House. This section of wall will be purchased in right-of-way acquisition and will be maintained by DeIDOT. The new stone faced retaining wall will abut this reconstructed section and match it as closely as possible in color and texture.

Part Two

Description of 4(f) Property

The project will be impacting lands associated with Woodley Park, a County owned and administered parkland. Woodley Park was acquired by New Castle County through three separate purchases from the Woodlawn Trustees. The first was in 1959, the second in 1962 and the final in 1974. Overall, the park is 123.79 acres and it is primarily a passive use facility with some playground equipment. There are homes surrounding the park, and there are plans in the future to possibly pave some trails through it.

The park borders the project area along the east bound lane of N227 and the northbound lane of N232. The intersection of these two roads is at the western edge of Woodley Park. A description of park boundaries and location of facilities is included on the site map.

Part Three

Applicability Criteria

1. The project is designed to improve the safety and physical conditions of the N232 and N227 intersection. All of the improvements will be made at the existing intersection location and will utilize lands adjacent to existing

facilities. There will be minor alignment shifts to accommodate the new turning lane along N227 and along N232 to accommodate the acceleration / deceleration lane. The project will address the substandard turning geometrics of the intersection and will channel traffic into the new turning pattern. The replacement of Bridge 523 with a new culvert structure will be at the same location and utilize the same roadway alignment.

2. The Section 4(f) lands associated with the project area are publicly owned and administered by New Castle County Department of Parks and Recreation. Park property boundaries lie directly adjacent to existing state right-of-way along the southbound lane of N227 and along the northbound lane of N232.
3. Woodley Park has a total acreage of 123.79 acres. The right-of-way required from the park for this proposed project is 0.126 acres and permanent and temporary easements total 0.164 acres. The total take from the Section 4(f) park lands is 0.290 acres, approximately 0.23% of the total park. This is below the 1% maximum for a programmatic 4(f) evaluation.

The 4(f) property required by the project is located at the edge of the park limits and is adjacent to the existing roadway. By utilizing this strip of land at the extreme of the park, the project will not impair or alter the use of the remaining Section 4(f) land, in whole or in part, for its intended purpose. The strip of land proposed to be used is a steep hillside slope with some mature trees.

4. The new intersection and approaching roadways will essentially occupy their existing location. Because access and / or parking for Woodley Park are not located in the project area, the redirection of traffic during construction will not hinder park access and will not hinder the use of the remaining Section 4(f) lands.

The property to be taken from the Section 4(f) park land is necessary for construction easements and the relocation of utilities. It is also necessary to incorporate the drainage work needed along the east bound lane of N227, as well as to maintain the proper side slope at the intersection and along the approaching roadways. The use of the Section 4(f) park lands for these purposes will not hinder the remaining Section 4(f) park lands for their intended use.

5. The New Castle County Parks and Recreation Department have jurisdiction over the Section 4(f) park lands to be utilized by the proposed project. They have indicated no objections to the project and consider the impacts of the take minor to the function of the parkland. Concurrence has been formalized in written comments and have been included as an attachment.

6. As presently proposed, the project will not be utilizing any land that was purchased using funds from the Land and Water Conservation Fund Act, the Federal Aid in Fish Restoration Act, or the Federal Aid in Wildlife Act. Accordingly, coordination with the appropriate Federal Agencies will not be necessary.
7. This project has been approved as a categorical exclusion, Class II Action Level C per 23 CFR 771.115(c).

Part Four

Alternatives

1. Do Nothing Alternative

The Do Nothing Alternative is not a feasible or prudent alternative because it would do nothing to upgrade the substandard geometrics or drainage patterns associated with the intersection. The Do Nothing Alternative ignores the basic transportation need and does nothing to correct the situation that causes the intersection to have higher than average accident statistics. Failure to correct the situation would be irresponsible and would serve to perpetuate the potential for more accident resulting in personal injury, property damage, and potential loss of life.

2. Improvement Without Using Adjacent 4(f) Lands

The nature of the project area prevents improvements without using the adjacent 4(f) park lands. Along N232, the side slopes associated with the project area are extremely steep. On the western side of N232 the slope drops rapidly beyond the stone wall down to the Mill Pond. By not using the adjacent 4(f) land to the east of N232, it would be practically impossible to create adequate side slope grades. If the 4(f) lands were not to be used, then the western edge of N232 leading down to the Mill Pond would have to be extensively filled and graded. It would shift the location of the stone faced retaining wall further to the west and would require it to be substantially extended vertically. This would be fiscally irresponsible as it would require much more in materials and labor. Additionally, it would not address drainage problems associated with the eastern side of N232.

Along N227, Section 4(f) lands to be purchased are needed to improve drainage and side slope conditions, as well as to service utilities. Nearly all of the expansion along N227 is utilizing non 4(f) land to the north. Guard rail will be placed in the new right-of-way along the southern edge of N227 and will protect vehicles from riding off the road into Mt. Lebanon Creek.

At the intersection of N227 and N232, nearly all of the expansion is utilizing non 4(f) Park land to the north. The 4(f) lands to be used is necessary to include a rip-rap swale that will be used to catch water coming down the slope off of Woodley Park. This swale will direct water flow to a catch basin just south of the intersection. By not utilizing the 4(f) land, the project would fail to address the substandard geometrics, sight distances, and turning radii of the intersection, as well as ignore the drainage problem associated with the steep edges of Woodley Park.

3. Alternatives on New Location

It is not prudent or feasible to avoid Section 4(f) land by constructing the N232 and N227 intersection on a new location. The intersection could be reconstructed using non 4(f) lands to the north. However, this would be financially irresponsible as it would require large amounts of new right-of-way acquisitions. Additionally, this land is extremely steep and the comparative environmental impacts associated with this project would be enormous as it would require excessive grading and filling. Depending on the alignment chosen, redesigning the roadways using land north could also require relocations for residents living in the area.

Overall, a new alignment using non 4(f) Park land to the north would be extremely impactful. Because the project is also within a National Register District, any alternative that requires additional right-of-way would not minimize impacts to this 4(f) Historic District.

With the alternatives exhausted, the proposed alternative employs a design that is respectful of the immediate natural and historic setting. As presented in the next part of this documentation, the proposed action includes all possible planning to minimize impacts to the Section 4(f) property.

Part Five

Measures to Minimize Harm

Coordination has been ongoing throughout project development with the appropriate resource agencies to resolve issues concerning the intersection improvement project. Major areas of concern expressed by the resource agencies centered on aesthetics and minimizing improvements as much as possible to preserve the rural historic setting of the area. Efforts to maintain the integrity of the historic landscape played a large role in the development of the proposed plans.

Since its original conception in 1984, this project has been reduced dramatically in scale in attempts to minimize the associated impacts to both the Section 4(f) Park

Land and the Section 4(f) Historic District. Accordingly, the project has evolved through many stages and conceptions, and the plans today reflect a commitment to minimize environmental impacts.

Construction Alternative One

This proposed alternative changed the location and the configuration of the intersection altogether. The intersection would have been 200' to the north and N232 would intersect N227 at a ninety degree T. N232 would have ended at this T intersection with a stop sign. Northbound and southbound traffic on N232 would each have had a 12' travel lane and 22' turning lanes. N227 would no longer have traffic control as traffic would be continuous. Westbound traffic would have been serviced by two 12' lanes through the N232 intersection and the realigned Creek Road. The second lane tapered down after Creek Road. There would also have been one 12' turning lane onto N232 southbound and one 12' turning lane into the Mill Condominiums. East bound traffic would have been serviced by a 12' travel lane through the N232 intersection, a 12' turning lane onto Creek Road, a 10' turning lane into the Mill Condominiums, and a 22' turning lane onto N232. Traffic turning east off N227 would be serviced by a 12' turn lane that tapered down about 150' from the intersection.

The associated costs and environmental impacts from this proposal were enormous. Although this proposal did avoid the Section 4(f) Park Land, it was entirely within the Section 4(f) Historic District. This project required building approximately 700' of new roadway and would require a substantial amount of right-of-way acquisition. Additionally, the realigned N227 would still remain on a substantially steep grade, thus not eliminating all of the substandard characteristics.

While being largely impactful, this option failed to address the basic problem of severe roadway grades. By moving the intersection further to the north, the grade problems are not being improved, they are simply being moved north. The intersection would be improved, but not to the extent that would justify such an impactful project.

This option also met with strong resistance from local residents who were concerned their quality of life would be compromised with such a large roadway coming through the area. Based on strong citizen opposition, engineering limitations and fiscal responsibility, Alternative 2 was developed.

Construction Alternative 2

Alternative two was developed and kept the intersection essentially on the same alignment. Since little can be done to correct the steepness of the roads, it was determined it would be best to minimize the impacts by making improvements on the existing alignment. Alternative two proposed to provide a separate right hand turning lane for traffic coming off N227. This lane continued around the N232 bend as an

acceleration / deceleration / turn lane for the Mill Condominiums and the realigned Creek Road. Alternative two also proposed to replace Bridge 523 with a culvert structure.

Alternative two proposed a stone faced retaining wall along the eastbound lane of N227. The wall was meant as a drainage aid that could trap water behind it, direct it into catch basins, and keep it off N227 and the intersection. This option minimized impacts to the Historic 4(f) property, however, it did require a strip of land associated with Woodley Park.

During the plan review process, It was discovered by field engineers that the stone retaining wall along the southbound lane of N232 was defective. There was concern it would fall into the Mill Pond, thus undercutting support for N232. A new stone faced retaining wall was proposed with a consistent height of three feet on the side facing the road. On the opposite side facing the Mill Pond, the height would be stepped appropriately with a height range between 5' and 15'.

Construction Alternative 3 - Semi-final Plans

Based on feedback from the appropriate resource agencies, Alternative three was developed with the intent of minimizing impacts to both the Historic and Park 4(f) Lands, while still providing adequate improvements to the roadways.

Alternative three removed the stone faced wall along N227 because it was decided the drainage problems could be addressed using a catch basin system and because the wall required additional 4(f) right-of-way. Removing this wall minimized impacts to the park. To compensate, a curb and gutter system was proposed for the eastbound lane of N227 which would direct water flow into catch basins.

As with alternative two, the proposed improvements would keep the intersection on its present alignment with a minimal widening to the north to add an auxiliary turn lane. The concrete island to be placed at the intersection would now have a stone faced pattern on the surface to better place it in an historic setting. N232 was also designed at a superelevation to help accommodate the sharp turn.

The following summarizes the commitments DelDOT has made to minimize and mitigate the project's impacts on the surrounding 4(f) properties.

Stone Walls

Originally, the replaced stone walls would have had a concrete-capped design. In consultation with the DE SHPO, it was decided a completely stone faced wall would be more appropriate. This new section of wall is going to abut reconstructed segments

that do not have a concrete cap. To maintain continuity along the entire wall, the sections to be replaced were redesigned to be visually compatible.

The DE SHPO will review the construction methodology and design materials prior to construction. The contract specifications will require the contractor to construct a test section of the wall for SHPO inspection and approval.

Bridge Replacement

Bridge 523 along N227 will be replaced with a new culvert structure. It will be faced with stone on the exposed surfaces to be visually compatible with the Rockland Historic District.

Photographic Recordation

To mitigate the removal of the stone wall along southbound N232, it will be photo documented in consultation with the DE SHPO. This will include photographing it in its present setting, prior to the proposed roadway project. This formal photographic recordation will be completed to National Park Service Standards.

Utilities

The telephone lines in the project area will be buried underground. All other utilities will remain aerial. Sewer and water lines will remain untouched.

Park Property

New Castle County Department of Parks and Recreation will be compensated for the take of Woodley Park through the payment of a yet undetermined amount of money. The compensation process will be coordinated through DelDOT's Preconstruction Department.

Wetlands

Wetland impacts in the project area are limited to the stream crossing at Bridge 523. The total area of impact is under one acre and will be processed under the U.S. Army Corps of Engineers Nationwide Program 23 as a Categorical Exclusion.

Other Design Exceptions

There have been several design exceptions throughout the project area that minimize impacts to both Section 4(f) properties. The horizontal curve on N232 has a radius of 260' and a curvature of 22 degrees. To remedy this would require a major realignment that would be highly impactful to the area. The lack of shoulders on N232 and N227 is also a design exception that could be corrected only through additional

impacts of Woodley Park. Both the maximum grades (N232=11% and N227=14%) are above the design standard, but could only be corrected with a project that has a major shift in alignment, thus increasing impacts to both Section 4(f) properties.

Part Six

Coordination

The agency with jurisdiction over Woodley Park is the New Castle County Department of Parks and Recreation. Concurrent with circulation of this Nationwide Section 4(f) documentation, Section 106 Documentation for a Determination of No Adverse Effect is being processed for the Rockland Historic District which totally encompasses the project area. Additionally, a Section 4(f) Evaluation is being processed for the use of properties associated with the historic property.

The permit application for the bridge replacement is being processed concurrent with this documentation. A U.S. Army Corps of Engineers Nationwide Permit is required for the replacement of Bridge 523 with a new culvert structure.

Agency coordination and comments are documented in the attached sections.



STATE OF DELAWARE
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THOMAS R. CARPER
GOVERNOR

July 10, 1998

Ms. Joan Larrivee
Division Administrator
State Historic Preservation Office
15 The Green
Dover, DE 19901

**RE: Informal Recordation for 84-041-03
Mt. Lebanon and Rockland Road Reconstruction Project**

Dear Ms. Larrivee,

Enclosed is a set of archive stable photos and negatives taken by Tim O'Brien, DelDOT's staff photographer. They are of the stone masonry wall that was reconstructed as part of the above mentioned project. The informal recordation of this wall is a stipulation of the projects Memorandum of Agreement. A second set of photos will remain in the DelDOT project folder. If there are any questions or concerns, please contact the Environmental Studies office.

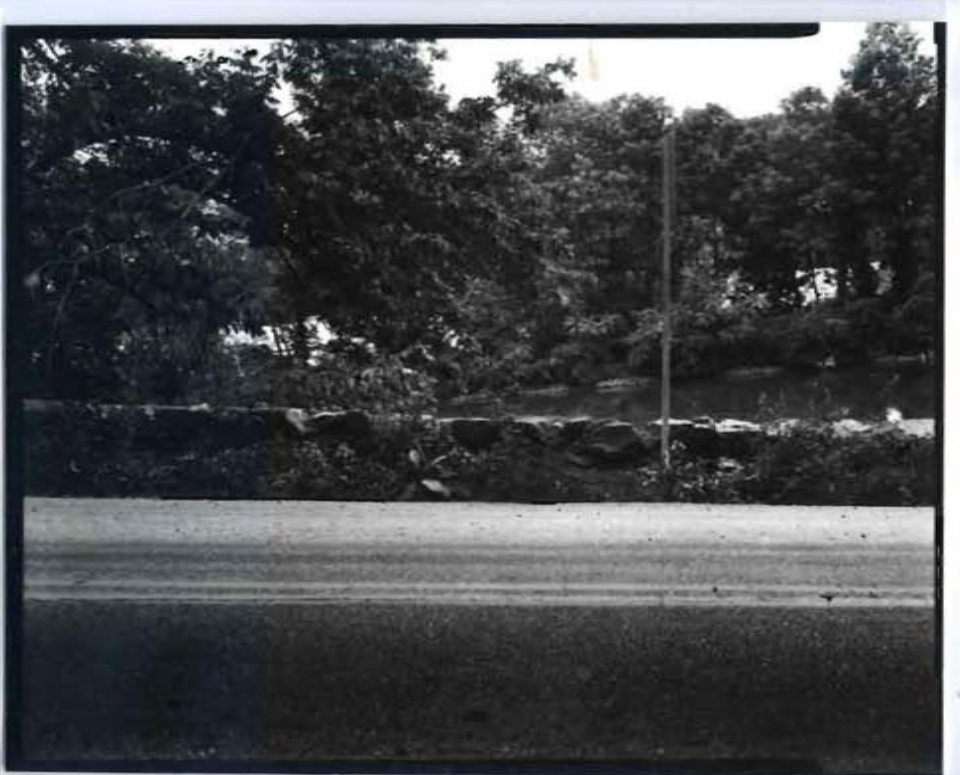
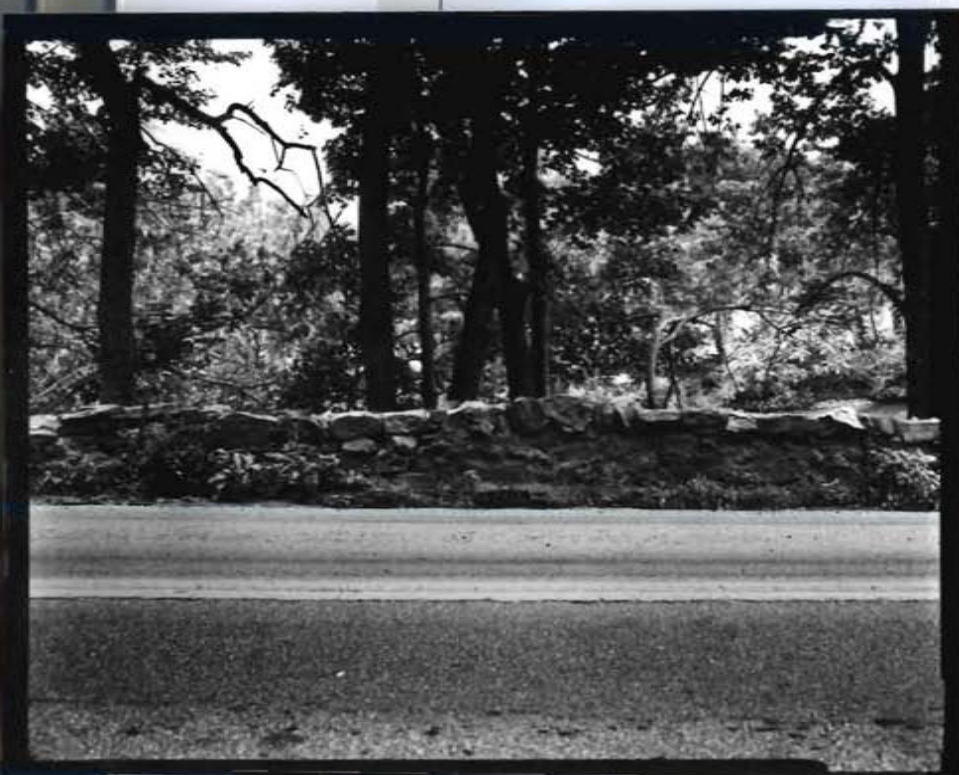
Sincerely Yours,

A handwritten signature in cursive script, appearing to read "Therese M. Fulmer".

Therese M. Fulmer
Manager, Environmental Studies

TF/vr
Enc.

cc: Eugene Abbott, Director of Planning
Joseph Wutka, Assistant Director of Planning







DATE:

ASSIGNMENT:

FILE NO: